

**Pricing Information Goods for Digital Libraries
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**Strategies for the digital library of the WU
- Focus on Rights Management**



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Abstract:

The purpose of this term paper is to develop strategies for the digital library of the Vienna University of Economics and Business Administration “<http://epub.wu-wien.ac.at>”, concerning rights management.

Epub, the digital library provides full-text access to research documents such as working papers and dissertations.

The task is to develop the best possible strategies to maximize the profits, based on the assumption that Epub would sell their content.

Through the digital technology the economics have totally changed.

The technological advances, the dramatic reduction in costs of copying and distribution make rights management more difficult.

But besides the threat through illicit copying this technology also offers many great new opportunities for the publishing industries

The term paper contains a description of information goods and the problem with the digital technology, digital libraries and digital rights management.

Further some case studies will be examined to show what kind of strategies other digital libraries are using to make profits.

Based on these facts possible strategies for Epub will be examined.

1. Introduction:

The term paper “Strategies for the digital library of the WU” is divided into the following sections: Information goods and the digital technology, Digital Libraries, Digital Rights Management, Strategies for publishers of IP, Case Studies of other Digital Libraries, Epub and strategies for ePub. The first section consists of a detailed description about information goods in digital form and the problems that occur because of the digital technology. The Digital Library part describes what digital libraries are and what kind of properties and functions they have. The next part of the paper deals with Digital Rights Management and the Architecture of DRM Systems. Further the Digital Millennium Copyright Act of 1998 will be gone through. General Strategies for publishers of intellectual property is the topic of the next section followed by the Case Studies of other digital Libraries. The targets of these case studies are: the National Academy of Sciences Press, the Academic Library, Dissertation.com and the UC Press eScholarship Editions. On the basis of these sections strategies for the digital library of the Vienna University of Economics and Business Administration are the content of the last part of the paper.

2. Information goods and the digital technology:

This Chapter contains a description of information goods in digital form and the problems with the digital technology. Properties of Information goods and how they differ from physical products will be treated and their threatening aspect for the publishing industry.

Definition of information good:

An information good is anything that can be digitized. This can be a book, a record, a movie, a record, an image and so on. In this definition it is important to note that it says anything that *can* be digitized, it is not necessary that the information actually *is* digitized. These digitized information goods are also called digital content. Though information goods in analogue form are common, they will become less in future. [HahsoJ]

Definition of Intellectual Property:

Intellectual property refers to creations of the mind: Inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. [WipooJ]

Properties of Information goods:

1. Information as experience good:

Information goods are experience goods. In order to buy an information good customers have to know what it is like first and if it fulfils their requirements. But if the owner gives away the material he wants to sell in order to show people what they are, how can he make profits then? There are solutions to deal with this problem:

Previewing and browsing:

Owners of intellectual property have to offer opportunities to let customers browse through their products. The movie industry solves this problem by offering previews. The publishing industry allows customers to browse through the books in bookstores.

The rapid growth of the Internet and the World Wide Web is transforming the way information is accessed and used. Nowadays new responses are required because of the Internet. Especially previewing textual information appears to be very difficult.

Reviews:

Another possibility to deal with the experience good problem is reviewing products and providing these reviews to the customers.

For instance in the entertainment industry film reviews, book reviews, and music reviewers are used.

Reputation:

Reputation is the third way to deal with the experience good problem. It is a standard practice in the information business to invest in brand and reputation. Customers will consume a product again when they have experienced it in the past and found it useful.

2. Cost structure of information goods:

Typically Information goods have high fixed costs of production and low marginal cost of reproduction. Information goods are expensive to produce but cheap to reproduce.

Producing a Hollywood movie for instance is very expensive. The movie can cost hundred million dollars while a copy of the original on CD can cost less than a dollar. The possibility of cheap reproduction has a big influence in rights management of intellectual property.

"With intellectual property, the upfront costs are what it's all about," (Microsoft Chairman Bill Gates) explained to the business titans assembled at the Redmond, Wash., campus (last May). "Say a piece of software costs \$10 million to create and the marginal costs, because it's going to be distributed electronically, are basically zero." Once the costs of development have been recouped, "every single additional unit is pure profit." But if someone comes along with a significantly superior product, "your demand can literally almost drop to zero."

- *Wall Street Journal*, August 23, 2001, [Davi02]

Production costs, warehouse expense and reproduction costs:

Production costs:

The costs of production of an information good typically has the property that it is very costly to produce the first copy and very cheap to produce other copies. The production costs are called "sunk costs". These are fixed costs for the production of information goods.

Warehouse expense:

The costs for the storage of information goods depend on the size, duration of the storage and the medium where they are saved. Since storing files is very cheap nowadays these costs are normally very low.

Reproduction costs:

Reproduction costs depend mainly on technical aspects. Normally they are very low compared to production costs.

3. Information as a public good

In contrast to private goods, pure public goods are nonrival and nonexcludable.

Nonrival: a person's consumption doesn't diminish the amount available to other people.

Nonexcludable: one person cannot exclude another person from consuming the good.

National defence would be an example for such a pure public good.

There is a difference between these two properties. Nonrivalness is a property of the good itself. By the very nature of the good the same amount of i.e. defence are available to everyone in an area. The difference in excludability is that it depends, at least in part, on the legal regime. I.e. If you do not pay the TV tax you are legally, not technologically, excluded from watching Television. It is a legal convention that ordinarily private goods are excludable. Excluding others from consuming a good works through technology or legal authority. Exclusion is not an inherent property of goods, public or private, but is rather a social choice. In many cases it is cheaper to make a good available rather than make them excludable, either via technology or by law.

Because of the tiny cost of reproduction information goods are also nonrival.

Whether they are excludable or not depends on the legal regime.

Without intellectual property laws everyone, who has the technological possibilities, could copy and distribute the information good. Exclusion would not be possible.

Difference in Distribution and Consumption:

Besides the impact that digitisation has on the cost structure of production and peoples demand, information goods in digital form also differ from physical products in distribution and consumption.

The distribution of products became a lot easier through the digital technology. Information goods can be directly distributed via the Internet. The production (copying) and delivery can be one step. The impact that it has on consumption is that most information goods are complementary products. Information goods need software to be consumed, software again needs Hardware. I.e. Electronic documents like Ebooks need a reader, music needs a player.

The problem with information goods in digital form:

A printed book can be used by one or maybe two people at the same time.

These people who must be in the same place as the book. If the same book is now available in electronic form, and there is almost no technological limit to the number of people who can access it simultaneously, from anywhere on the planet where there is an Internet connection. This is a wonderful possibility for consumers. The electronic property of libraries and other people around the world are available from a home computer every time and they are never "checked out." These advances in technology create new opportunities and markets for publishers.

But it also has a very threatening aspect. The Question for publishers of intellectual property is: "How many copies of the good can be sold if networks make world wide access possible?" The nightmare is that it will be only *one*. If the entire market can be extinguished by the sale of the first digital copy, how many books or other information goods will be created and published then.

This new technology can enormously improve access to information. Access in a way that was never before practical. Information in digital form, computer networks, and the World Wide Web represent a big problem for the publishers of intellectual content because advances in technology have produced radical changes in the ability to reproduce, distribute, control, and publish information. Now the industries must re-examine the concepts, policies, and practices associated with intellectual property:

The economics and ease of reproduction has totally changed through the digital technology. Reproduction costs are much lower for both content owners and copiers alike. Digital copies are also perfect copies of the original. Each copy is a seed for further perfect copies. Analogue media had natural barriers to copying, such as the expense of reproduction and the decreasing quality of the copy of the original. Nowadays the average computer owner can easily do the kind and the extent of copying that would have required a significant investment and perhaps criminal intent only a few years ago.

Computer networks have changed the economics of distribution enormously. With very high transmission speed, networks enable sending information products worldwide, cheaply and almost instantaneously. It is easier and less expensive both for a content owner to distribute a work and for individuals to make and distribute unauthorized copies.

The World Wide Web has also radically changed the economics of publication. Nowadays everyone can be a publisher with worldwide reach.

The variety of documents, opinions, articles, and works of all sorts on the Web demonstrate that millions of people worldwide are making use of that technology.

3. Digital Libraries:

The following chapter will provide an overview about digital libraries and their properties. Nowadays there is a high interest in digital libraries. There are many large grant projects, an explosion of work performed by local individuals and institutions, international conferences, high activity in the computer science community, new journals dedicated to the subject, and a great deal of activity on the Internet. Last year an Alta Vista search on "digital library" OR "digital libraries" retrieved about 20000 entries.

Definition:

*“Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works **so that they are readily and economically available for use by a defined community or set of communities.**”*

Digital Library Federation (DLF) 1998, [Wate98]

The term "Digital Library" has a many potential meanings:

It can be a collection of material in organized electronic form that one might find in a traditional library through to the collection of all digital information along with the services that make that information useful to all users. Depending on the specific library, a user may be able to access magazine articles, books, papers, images, sound files, and videos. The primary goal of a digital library is to provide universal access to information goods.

Properties of Digital Libraries:

The collection of services:

A digital library is more than just the collection of material. The digital library provides a collection of services to all of its users.

There are many such services, including services to support management of collections, services to provide replicated and reliable storage, services to aid in query formulation and execution, services to assist in name resolution and location, etc.

The collection of information objects:

The information objects that provide the content are the basis for a digital library. Information objects are found in collections with associated management and support functions. This is a basic characteristic of the digital library. Information objects vary from traditional "documents" through to live objects or dynamic query results.

Supporting users deal with information objects:

To assist users by satisfying their needs and requirements for access, management, storage, and manipulation of the variety of information stored in the collection of material of the library is the purpose of a digital library. Users can be humans or automated processes acting in support of human needs. Users include those who are "end" users, library operators, and producers of information goods.

The organization and presentation of those objects:

Implementing simple structural organizations and the ability to present those organizations in a way that library users find useful easy to understand is the key to effective collections management. To serve a community of users is the purpose a library is created for.

Users of the digital library should be able to handle with its design and to collectively refine that design to better serve their own information needs.

The human usability of a digital library depends on the clear and unobtrusive exposure of the library's design, its near-term goals, and its overall objectives.

Available directly or indirectly:

The digital library's information objects can be digital objects.

They may also be in other media i.e. paper editions, but represented in the library via digital means. The objects may be available directly over the network, for instance the object in digital form, or indirectly, in example the result of a query may give instructions on how to obtain the object, but that is done outside the scope of the library itself.

Electronic/digital availability:

To consider the objects to be part of the digital library they have to be represented electronically somehow, i.e. metadata or catalogues, although they are not available directly over a network.

4. Digital Rights Management:

In the digital age DRM poses one of the greatest challenges for content communities.

The traditional rights management of physical material was easier because the fact that these materials were physical and not digital provided a barrier to unauthorized copying. Because of the ease of digital reproduction and transmission there are serious breaches of copyright law.

DRM previously focused on security and encryption to solve the problem of unauthorized copying. This security and encryption has the purpose to lock the content and limit its distribution to only those who pay. This was the first generation of DRM.

The second-generation of DRM covers the description, identification, trading, protection, monitoring and tracking of all forms of rights usages. DRM does not only manage the rights applicable to permissions over digital content. It manages *all* rights.

There are two important critical architectures to consider in designing and implementing DRM systems:

1. Functional Architecture: consists of the high-level modules or components of the DRM system that together provide an end-to-end management of rights.
2. Information Architecture: covers the modelling of the entities within a DRM system and their relationships.

Functional Architecture:

The DRM framework to build digital rights-enabled systems can be modelled in three areas:

1. Intellectual Property Asset Creation and Capture:

The subject of this module is to manage the creation of content so it can be easily traded.

The module supports:

Rights Validation:

This is important to ensure that content which is created from existing content includes the rights to do so.

Rights Creation:

Allowing rights to be assigned to new content - specifying the rights owners and allowable usage permissions.

Rights Workflow :

Permission for content to be processed through a series of workflow steps for review and approval of rights.

2. IP Asset Management:

The subject of the IP Asset Management module is to manage and enable the trade of content. IP Asset Management includes accepting content from creators into an asset management system. Trading systems need to manage the descriptive metadata and rights metadata for instance parties, usages, payments, etc. This second module supports:

Repository functions:

Enabling the access or recovery of content in potentially distributed databases and the access or recovery of metadata. Parties, Rights and descriptions of the Works is what is covered by the metadata.

Trading functions:

Providing the assignment of licenses to parties who have traded agreements for rights over content, including payments from licensees to rights holders.

3. IP Asset Usage:

Subject of the IP Asset usage module is to manage the usage of content once it has been traded. The last module supports:

Permissions Management:

Deals with the usage environment. For instance a user can have only specific rights associated with some content. Viewing a document can be allowed i.e. but printing can be prohibited.

Tracking Management :

A user can for instance have the right to consume a good for a limited period or a given number of times. Tracking management deals with the tracking of the consumers usage.

These three modules provide the core functionality for DRM systems. The second architecture is the information architecture

Information Architecture:

How the entities are modelled in the overall DRM framework and their relationships is what the information architecture deals with. Main issues:

- Modelling the entities
- Identifying and describing the entities, and
- Expressing the rights statements

Modelling the entities:

A clear and extensible model for the DRM entities and their relationship with other entities has to be adopted.

In example the <indecs> project:

This model clearly separates and identifies the three core entities: Users, Content, and Rights.

The model provides the biggest flexibility when assigning rights to any combination or layering of Users and Content.

USERS - own → RIGHTS - over → CONTENT ← create/use → USERS

Any metadata about the three entities needs to include a mechanism to relate the entities to each other. The Content itself also needs to be modelled.

Content contains many "layers" from various intellectual stages or evolution of its development. This model enables clearer attribution of rights information. Different rights and rights holders may need to be supported at each of these layers.

Identifying and describing the entities:

All entities need to be identified and described. For each entity in the model identification works via open and standard mechanisms. The entities and the metadata records about the entities must both be identifiable.

For Rights identification: Open standard mechanisms such as Uniform Resource Identifiers (URI) and Digital Object Identifiers (DOI) and the emerging ISO International Standard Textual Work Code (ISTC)

Content description: metadata standard for that genre - for example, the EDItEUR ONIX standard (ONIX) for books (physical and electronic) and the IMS Learning Resource Metadata Information Model (IMS) for educational learning objects.

To describe Users: the most well-known metadata standard for describing people and organizations is vCard (VCARD).

Expressing rights statements:

Rights expressions contain:

Permissions: what is someone allowed to do?

Constraints: restrictions on the permissions.

Obligations: what someone has to do/provide/accept

Rights Holders: who is entitled to what?

Digital Millennium Copyright Act of 1998

Introduction

President Clinton signed into law H.R. 2281 on October 28, 1998, the Digital Millennium Copyright Act.

The legislation primarily implements two 1996 World Intellectual Property Organization (WIPO) international copyright treaties: the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty. Also addresses a number of other significant copyright-related issues are addressed.

Signatories were required to punish those who act wrong with technologies designed to prevent unauthorized copying of copyrighted works, such as using "black boxes" to descramble audio video signals, hacking into Web sites that charge for viewing, and bypassing technologies that prevent unauthorized copies of videotapes. Also the integrity of copyright management information, defined as information identifying the work, its author and owner, and the terms and conditions of permitted use has to be protected by the treaties.

DMCA contains both exceptions and additional regulations demanded by various industry groups. The Act limits the liability of online service providers and amends the copyright laws in various other ways besides from implementing the treaties.

The DMCA is needed because it protects the intellectual work from copyright violations. But it still needs fixing and some modifications must be made. The Problem with the DMCA in its present form is that it could adversely affect research competitiveness. In section 1201 of the DMCA it says: "No person shall circumvent a technological measure that effectively controls access to work protected under this title." This definition is broad enough to bar almost all unauthorized decryption of content. The section also prohibits the manufacture, release, or sale of products, services, and devices that can crack encryption designed to thwart either access to or copying of material unauthorized by the copyright holder.

But what about the work that is done for research and educational purposes only. In example the recent arrest of Dimitry Sklyarov, a Russian Ph.D. student is a reminder to re-examine the DMCA. Sklyarov was arrested under the DMCA that punishes anyone who distributes "any technology, product, service, device, component or part" that, like Sklyarov's software bypasses copy-protection mechanisms. Sklyarov's work was for research and educational purposes only. It shouldn't happen that intellectuals get arrested for their research work done in good faith.

The DMCA must be modified so that new research in information security and assurance is encouraged and not curbed. The exceptions that the DMCA contains by now are too limited.

The Digital Millennium Copyright Act is divided into five titles:

Title I: the "WIPO Copyright and Performances and Phonograms Treaties Implementation Act of 1998," implements the WIPO treaties.

Title II: the "Online Copyright Infringement Liability Limitation Act," creates limitations on the liability of online service providers for copyright infringement when engaging in certain types of activities.

Title III: the "Computer Maintenance Competition Assurance Act," creates an exemption for making a copy of a computer program by activating a computer for purposes of maintenance or repair.

Title IV: contains six miscellaneous provisions, relating to the functions of the Copyright Office, distance education, the exceptions in the Copyright Act for libraries and for making ephemeral recordings, "webcasting" of sound recordings on the Internet, and the applicability of collective bargaining agreement obligations in the case of transfers of rights in motion pictures.

Title V: the "Vessel Hull Design Protection Act," creates a new form of protection for the design of vessel hulls. [Keyt01]

Each title of the DMCA is going to be summarized to provide an overview. Reference to the text of the legislation itself is required for a complete understanding of any provision of the DMCA.

Title 1: WIPO Copyright and Performances and Phonograms Treaties Implementation Act

The first title amends the existing U.S. copyright law to comply with the WIPO Copyright Treaty and Performances and Phonograms Treaty.

They build the basis for international copyright law and management to open world markets for copyright protected materials.

The main goals of the first title are:

1. A prohibition of all unauthorized access to copyrighted material by means of bypassing a security measure meant to control access. [Offi99]

Individuals or organizations cannot use technology to unlawfully bypass encryption measures used by the copyright holder to limit access. But there are some situations in which bypassing encryption measures will be necessary, which is why there are several exceptions to the universal ban.

a) Software developers can bypass encryption measures of legally obtained products in order to reverse engineer them (as allowed under existing copyright law) for interoperability development;

b) Researchers studying new encryption technologies can bypass encryption measures when necessary under existing U.S. law if the materials are legally obtained and the researcher makes an effort to get permission from the copyright owner before attempting to bypass the security measures;

c) System administrators and security specialists can bypass encryption measures to test for security integrity of systems and software;

d) A user can bypass security measures (ex. disabling cookies) to protect personally identifying information if there is no other way to avoid the intrusion and there is no other effect on the performance of the product; and

e) Nonprofit libraries, archives, and educational institutions can bypass encryption measures of materials being reviewed for purchase if a copy of the materials is unavailable to them in any other manner. [Offi99]

The Librarian of Congress has announced the classes of works subject to the exemption from the prohibition on circumvention of technological measures that control access to copyrighted works, on the recommendation of the Register of Copyrights.

The two classes of works:

1. Compilations consisting of lists of websites blocked by filtering software applications.
2. Literary works, including computer programs and databases, protected by access control mechanisms that fail to permit access because of malfunction, damage, or obsolescence. [Offi99]

These exemptions are in effect from October 28, 2000 to October 28, 2003.

(Recommendation of the Register of Copyrights and Determination of the Library of Congress, 65 FR 64555, October 27, 2000.) [Offi99]

Libraries are already experiencing adverse effects from technological measures and an exemption is needed to ensure that libraries and library users can continue to exercise fair use and other activities permitted under copyright law. This is the problem with this rule.

libraries and academicians are preparing for recommendations to this ruling. It may remain or be changed in 2003.

2. A prohibition on the creation, trade and marketing of products meant solely to gain unauthorized access to copyrighted materials. [Offi99]

Individuals or organizations are permitted to develop to market products that are meant to allow people to bypass security measures placed on copyrighted materials.

3. A prohibition on the changing, removing, or falsifying copyright information on a protected work. [Offi99]

Title 2: The Online Copyright Infringement Liability Limitation Act

The DMCA adds a new Section 512 to the Copyright Act. This section is designed to limit the liability of Internet service providers. Section 512 contains several subsections.

Subsection 512(a) determines that a service provider is not liable for automatically transmitted third-party materials in response to user's requests. This can happen in example when a user uses a browser to call up a third party Web page.

512(b) determines that service providers are not liable for most forms of system caching. When a user i.e. calls up third party Websites, these sites are temporarily stored on the service provider's server. 512(c) regulates that service providers are not liable for innocently storing information on their systems at users' direction. That service providers are not liable for innocently referring or linking users to infringing sites by providing directories, indexes and hypertext links to such sites is determined under 512(d). Under 512(e) colleges and university service providers' liabilities for infringements by faculty and graduate students are limited.

And Subsection 512(g) limits service providers' liability for taking down or disabling access to material reasonably claimed to be infringing. [Baga99]

These limitations on liability not only remove the threat of damages, costs and attorneys' fees, but also limit the scope of injunctive relief under Subsection 512(j). That none of these express limitations on liability affects what should be held infringing in the first place is clarified in 512(l)

Title 3: Computer Maintenance Competition Assurance Act

Section 117 of the Copyright Act, which deals with computer programs, gets expanded by title 3. Lawful owners of a copy of a program are allowed to make reproductions when necessary to use the program in conjunction with a computer.

Owners or lessees of a computer are permitted to make or authorize the making of a copy of a computer program in the course of maintaining or repairing that computer.

Only a copy that is made automatically when activating the computer, and only if the computer already lawfully contains an authorized copy of the program, is permitted through this expansion.

The copy that is made is only for the mentioned purpose. It can't be used for anything else and must be destroyed immediately after fulfilling its requirements.

Title 4: Miscellaneous Provisions

The making of digital copies, sound recordings and distance education, duties, job descriptions and salaries of certain U.S. government copyrights and patents employees are the topics of the fourth title.

Probably the most significant topics in the fourth title are Distance Education and Digital Copies for Preservation.

Distance Education:

In Section 403 a study by the U.S. Copyright Office is established. The purpose of this study is to collect information about distance education to prepare a congressional report which should contain new ideas to promote distance education through the digital technologies.

After the DMCA was released, the Copyright Management Centre of the Indiana University promptly realized what potential impact section 403 has on the university and along with the Indiana Partnership for State wide Education and the Indiana Commissioner for Higher Education, they held a meeting to gather information about distance education within the state of Indiana to send to the U.S. Copyright Office and to Indiana's delegation to Congress.

Digital Copies for Preservation:

Libraries and archives are allowed to make up to three digital copies, which can only be used on the library premises, of rare or deteriorating materials for preservation purposes.

It is also allowed to make Copies of materials stored in technologically obsolete formats whose devices are no longer manufactured or reasonably available.

This is determined in Section 404 which further states that if the original item bears a notice, a copyright notice is required if, otherwise it is necessary that a statement about the applicability of copyright to the work is included.

Title 5: Protection of Certain Original Designs

The Vessel Hull Design Protection Act (VHDPA), adds a new chapter 13 to Title 17 of the U.S. Code. This is the topic of title five. In the VHDPA a new system is created to protect original designs of certain useful articles, which are limited to the hulls (including the decks) of vessels no longer than 200 feet.

As soon as a useful article containing the design is made public or a registration for the design is published, the design is protected.

If an application for registration is not made within two years after a design is first made public, protection is lost. But if a design it has been made public more than one year before the date of the application for registration, it is not registrable.

From the date protection begins it continues for ten years if it is once registered.

The VHDPA is subject to a legislative sunset: the Act expires two years from enactment (October 28, 2000). The Copyright Office is directed to conduct two joint studies with the Patent and Trademark Office—the first by October 28, 1999 and the second by October 28, 2000—evaluating the impact of the VHDPA. [Keyt01]

5. Strategies for publishers of IP:

Because of these facts the industry sees the internet as a „giant, out of control copying machine”. They feel powerless to deal with the problem of illicit copying of intellectual property through the digital media.

But these technological advances that make rights management more difficult, the dramatic reduction in costs of copying and distribution, also offer fantastic new opportunities for owners of intellectual content. The industries should view the digital revolution as a great opportunity to increase their sales. In the history there were always new reproduction technologies that represented a thread for owners of intellectual property. But the industry

learned to deal with these problems. Why shouldn't they also be able to overcome the threads raised by digital reproduction.

How digital technology affects the management of intellectual property:

As mentioned before digital technology changes two significant costs:

- Digital technology lowers reproduction costs
- Digital technology lowers distribution costs

In other technological changes, some made copying easier, others made distribution easier. Example: A tape recorder lowers production, but not distribution costs

But digital technology lowers both - copying AND distribution costs.

These new possibilities of the digital technology offer a different set of challenges to rights management and requires new responses. Instead of fighting against lower distribution costs, the publishers should take advantage of them.

Giving away your content:

Information goods are “*experience goods*”. Consumers don't know what a good it is worth to them until they experience it. That's why bookstores typically allow their customers to browse through their books before they buy them. Nowadays you customers also browse through the books in the Internet. By “giving away” at least part of their content, publishers end up making a lot more money. These free samples which allow customers to experience the information good are called *infomercials*. The owner breaks up his product into components. Some parts he gives away – the infomercials, the advertisement for those parts which are being sold. Offering free samples of consumer products is an old marketing tactic, but updated for the digital age. The Internet is ideal for infomercials because the publisher hardly doesn't have any costs. Another possible strategy, in case of books, is to post the entire content online. Studies have shown that posting entire books online can increase the sales because consumers prefer the physical version much more.

This is a strategy which the National Academy of Sciences Press uses in example.

They put more than thousand of its books on-line and found that this has boosted sales of hard copies by two or three times. The NAP will be examined more exact in the paper later.

But the publisher must be careful with this strategy, because if the online version is too easy to print out, then hardcopy sales could suffer.

Demand for repeat views:

Repeated plays are very important for some sort of information goods, i.e. Music.

For instance samples of music are broadcasted over the radio. The lack in these samples is that the consumer can just hear them when the DJ wants to broadcast, and not when HE wants to hear them. The CD Version of a song has the following value in addition. The song is that it can be played when, where, and how the consumer wants it to be played. This is called “option value”. The consumer has the option to play it where and when he wants.

Especially among children, the desire for repetitions is common.

That's why it is a good marketing strategy to give away samples of videos , music or books to increase the sales. For instance in the early 1990s Disney has taken several day care centres to

court for showing Disney videos without a license. It would possibly have made a lot more sense to at least experiment with some marketing campaigns directed at the day care centre. For example they could have provided a special package of Disney videos with a license allowing them to be shown for a limited period of time, as long as the day care centre distributed coupons to the parents offering deals on purchasing their own copies of the videos. The shown videos at the day care centre would have probably been very effective, creating a demand for repeat views. The same desire for repetitions also exists among adult consumers as we can see in the video purchase industry.

Similar, but Not Identical, Products:

Another strategy is to give away samples in order to sell similar, but not identical, products. Consumers don't want to repeat viewing the same images. They want variations. Variations on the same basic theme. I.e.: Playboy Magazine:

The consumers would soon be tired of seeing the same images over and over again. Because of that fact there would be no risk to give away samples for free. Playboy can give away some of its content to create demand for other items it sells. For instance when Playboy posts a "free" image of the playmate of the month without caring about copyrights, they certainly make a profit on the photo by charging a huge amount per month for a banner ad on its website. It also makes sense for Playboy to give away free pictures when people associate it with the Playboy brand. Therefore Playboy uses logos and text that tells customers where the Image comes from, so that they know where to go to get more.

This strategy of giving away a sample does not only work for images.

For instance McAfee, a enterprise that sells computer security tools. In 1989 engineer John McAfee posted his first anti virus software in the Internet and asked those who downloaded it to send him whatever they thought it was worth to them. He made 5 Million dollar in his first year with this.

In 1992 McAfee went public. In 1997 McAfee had a 3.2 billion market value, shipping more than a half of the worlds antivirus software in this year. The company still offers many of its products for free via the Internet. They make their revenues on *upgrades* and customer *services*. In December 1997 McAfee merged with Network General. They created Network Associates, the largest independent software company. This is not bad for a Company that "gives away" its products.

Free samples of information are effective for two reasons:

1. consumers need samples to see what it is you are selling - experience good effect.
2. providing these extra bits costs almost nothing.

Complementary goods:

The next strategy is selling complementary products. The idea is to give away an index in order to sell the main material. The Wall street journal and the Economist for instance provide consumers free full text searching of their back issues and then charge a couple of dollars to download the articles. The owner offers the index or search service for free to increase the demand for content he wants to sell. Sometimes it's also the other way around: the content is free and the organization is what is valuable.

Illicit Copying

The most routine access to information in the digital world involves making a copy. For example Computer programs are run by copying them from disk to memory, Web pages are viewed by copying them from a remote computer to the local machine. But the right to copy is the basic right of a copyright holder. For digital information, access *is* copying.

A solution is needed for conflict between the desire to provide access to works and the desire to control copying. This problem affects authors and publishers who wish to distribute digital works and need a possibility to do this in way that the work can be accessed, but still be protected against unauthorized reproduction.

All the tactics mentioned before are very clever but although illegal copying of intellectual content can decrease the profits But there are some compensating factors.

1. Information that is timely, or that people tire of very quickly, is less threatened by illicit copying. For instance Sport scores or financial information are most valuable when they are fresh. Copies of this sort of material can serve as illustrations of the quality of the fresh material that the publisher provides. But providing too much of the old material can also be dangerous. Giving away a few free samples from an archive is a good idea. But to give away unlimited access, including search possibilities, is quite another matter. This is why for instance the Wall Street Journal gives away only a couple of weeks of its archive. But for older material consumers have to pay. Such an archive can be very valuable.

2. Bitleggers have the same problem that any other people that sell illegal material have. They have to let customers know where they can find them. By advertising their location to customers, they also advertise their location to law enforcement authorities.

This fact puts a natural limit on the size of these illegal activities.

The bigger bitleggers get, the easier they can get caught by the authorities.

Of course digital piracy can't be eliminated totally. But it can be kept under control.

6. Digital Libraries – Case Studies:

1. The National Academies Press



The National Academies Press was created by the National Academies to publish the reports issued by the National Academy of Engineering, the National Academy of Sciences, the Institute of Medicine, and the National Research Council.

All of them are operating under a charter granted by the Congress of the United States.

Over 200 books a year are published by NAP on a wide range of topics in science, engineering, and health, capturing the most authoritative views on important issues in science and health policy. The institutions represented by NAP are unique in that they attract the nation's leading experts in every field to serve on their blue ribbon panels and committees. For definitive information on everything from space science to animal nutrition, NAP is the right place.

In the digital library of the National Academies Press you can read more than 2500 books online for free. They found out that this strategy has boosted sales of hard copies by two or three times.

By examining this strategy it is important for the NAP to take care about the following: if the online version is too easy to print out, then hardcopy sales could suffer. The online version of the book looks like that: Every single page of the book can be viewed in a jpeg file. This makes it hard to download. If a user now wants to print the whole book he must print every single jpeg file.

The Image file of a text also does not offer the same functions like a word or PDF document. And this is the second way a customer can buy a book. The customer may buy a PDF file of the full text of the book, individual chapter files, or a combination of the printed book and the full text PDF file. The combination of the PDF and the printed book is the best value. When a customer purchases the printed book via the Web, he only pays 20% more for the PDF.

PDF is an acronym for Portable Document Format. The PDF file format is created by Adobe Systems, Inc. PDF is a self-contained cross-platform document. That means it is a file that will look the same on the screen and in print, regardless of what kind of computer or printer someone is using and regardless of what software package was originally used to create it. PDF files are highly compressed, allowing complex information to be downloaded efficiently, although they contain the complete formatting of the original document, including fonts and images.

Each PDF book or chapter on the NAP Website may be downloaded to the customers computer, viewed, and printed out using Adobe Acrobat Reader from within a browser or as its own application. The reader can be downloaded at www.adobe.com. Microsoft Windows, Macintosh, Linux, and most other operating systems have means of reading PDF files. In order to purchase the books, the customer must use the Web site and pay with a valid credit card.

Copyright Issues:

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Search options:

In addition to the service that books can be read online for free, the NAP also offers several search options to their customers.

Search all titles:

Searches the title, subtitle, and descriptive information of nearly 2,000 titles. Customers may search by title and they may also enter an ISBN number in the input box.

Search all text:

Customers can search the Full Text of all available digitized pages.

Browse categories:

The last option is to browse through lists of book titles by category.

The NAP also offers a catalogue downloadable in a PDF version. This Catalogue contains the following sections: New Trade, New Releases, Previously Announced, Trade Books, Books by Subject, Bestsellers, Title Index and Ordering Information.

DRM:

The National Academies Press supports security and encryption to lock the content and limit its distribution to only those who pay, the first generation of DRM. Further it supports:

IP Asset Management: Repository functions - Rights and description for content is mentioned.

Trading functions - Reprint Permissions can be requested.

IP Asset Usage: Permissions Management - Reprint Permissions.

The Academic Library:

Academic Library

Another Digital Library is the Academic Library. It is a fully searchable online library containing over 40,000 full-length research papers and articles spanning the last four years. These articles are donated and published from scholarly students attending junior high school, high school, and college. They cover a broad spectrum of disciplines and topics. Ideal articles for every type of researcher.

The online database is accessible to Students and researchers 24-hours-a-day, 7 days a week, on any computer with Internet access. When a user subscribes to the Academic Library, he gets 24-hour access to the online database containing full-text articles written by thousands of scholarly students.

For a price of \$4.95 per month, the customer receives unlimited monthly access to view and download all of the 40,000 articles, essays, and research papers available online.

Copyright Issues:

Without the prior written permission of Academic Library and its suppliers, customers may not copy, publish, modify, distribute or transfer any material on this site, in whole or in part except for their personal non-commercial use only.

Search options:

There are two primary methods available for searching Academic Library.

Customers have the ability to browse through a perfectly arranged catalogue of articles, superior search and relevancy ranking techniques using Google SiteSearch and their local search engine.

The catalogue contains the following sections:

Biographies, English, Philosophy, Science, Book Reports, History, Others, Psychology, Social Issues, Business, Law, Religion and Technology.

For this little price the customer is not limited in viewing or downloading any specific number of articles, essays, and research paper from the database.

In other words, he may view or download and enjoy as many articles as he wishes.

Customers are not allowed to share their password with other people.

If the Academic Library notices that two or more people are accessing their database using the same password, customers will be warned and the account will be closed if it happens again.

Customers can pay by credit card, checking account or PayPal account.

DRM:

Also Academic Library supports security and encryption to lock their content and limit its distribution. It also supports:

IP Asset Management: Repository functions - Rights or description for content mentioned.

IP Asset Usage: Permissions Management – customers are not allowed to copy, publish, modify, distribute or transfer any of their material.

Tracking Management – customers have the right to access content for a limited period of time.

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Dissertation.com offers the following search options:

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Dissertation.com offers a keyword search option for dissertations and theses. Customers can search by keyword, subject, title or author.

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Free-To-Search database of scientific, technical, medical, and other scholarly content. Customers can search through 20 million citations and 10 million abstracts from over 35,000 journals.

3. NDLDT Keyword Search

Keyword Search of All On-line Digital Libraries of NDLTD
(Networked Digital Library of Theses and Dissertations, including Dissertation).

DRM:

Dissertation.com also locks their content and limit its distribution to customers that pay for it.

Further:

IP Asset Creation and Capture: Rights Creation – Authors control the distribution and copyrights.

IP Asset Management: Repository functions - Rights or description for content mentioned.

University of California Press and California Digital Library's eScholarship program:

Through a partnership with the University of California Press and the California Digital Library's eScholarship program over 1000 titles are available online. For all books, the print version can be purchased online from their website. Nearly 400 of the titles are available to the general public and can be read online. Public means that this book is available online to everyone. The book is not in the "public domain," only anyone can access it. It is still under copyright to the University of California Press. The other titles are for University of California faculty, staff, and students only.

Titles are being released in stages. Five hundred titles, including over 300 public titles, were released October 28, 2002. By Fall 2003 there will be 1,500 books available online. These titles represent about one-third of the UC Press books in print and cover a range of topics in the humanities, social sciences, and sciences. The URL for each available title appears in the UC union catalogue, along with the rest of the cataloguing information for that book. The UC Press eScholarship Editions represent another element of the continuing partnership between the University of California Press and the California Digital Library's eScholarship program. All titles can be purchased online with a valid credit card.

UC Press eScholarship Editions offers a wide range of search options:

Normal search options:

Searching across the Collection versus within a book:

Customers are able to search in two ways: They can search across the Collection or search within a book. Searching across the Collection is possible from the front page, the advanced search page, as well as by selecting the "All Books" option in the Navigation bar at the top of the page. The second way is to search within a book by selecting the "This Book" option while browsing a book.

Show only Titles available to everyone:

The „Show only public titles“ button on the top of the search results page enables customers to search only the titles available online to everyone.

In the advanced search option, in each search section there is a check box that says "Limit to books available to everyone." Selecting this option will also restrict the search to only public books.

Advanced Search options:

By clicking the "more options" button at the home page customers can go to the Advanced Search page. The following options can be found there:

Book Descriptions:

Selecting this option will search through the summaries of the books, not the full text.

Full Description:

This option will search through the description of the book: title, author, subjects, summaries, etc.

Authors:

The authors option will only search through the author field used to describe the book by entering the authors name.

Titles:

With this option customers can search through the title field used to describe the book.

Subjects:

This option will only search through the list of subject fields describing the book.

Book Text:

Search option for full text search of all the books.

Full Display vs. Brief Display:

The **Brief Display** mode will only display the Title, Author, and Subjects.

Selecting the **Full Display** option shows all fields, including a brief description, or summary, of the book.

Sort by:

Relevance

This option ranks the books in which the search terms appear according to relevance.

Relevance is computed by algorithms that compare how many times your search terms appear in the book, how many total words are in the book, and the position of the search terms within the text and many other factors.

Title

This option sorts the books alphabetically by title.

Browse by:

Subject:

The browse by subject option returns a list of the subjects for all of the UC Press eScholarship Edition books, along with a total of the number of books for each given subject.

Author:

The author search option returns a list of all of the books, sorted alphabetically by author last name.

Title:

The title search option returns a list of all of the books, sorted by title.

DRM:

UC Press eScholarship Editions also supports security and encryption to lock the content and limit its distribution only to customers who pay for it.

IP Asset Management: Repository functions – Rights or description for content is displayed on the website. Some content i.e. can only be accessed by members of the University of California faculty, staff or students

7. Strategies for EPUB:

1. Strategy - giving away your content:

A possible strategy for Epub could for instance be to give away a table of content and only some of the chapters of the literature. They could i.e. give away the first 25 pages of each work for free like dissertation.com does it.

Epub could also make these 25 pages available for download in PDF format or post it online. People could browse through these free chapters to experience the good and see what it is worth to them in order to buy it or not.

As mentioned before the National Academy of Sciences Press put more than thousand of its books online and it has boosted their sales of hard copies by two or three times.

Posting the whole content would probably fail in this case because since Epub delivers their literature in PDF format the user has to print the text anyway.

But a possibility that would allow Epub to use such a strategy would perhaps be to use some sort of technology like macromedia flash. They could add the text in a flash movie file. In that case the only way to print out the whole book would be to make a screenshot of every single page and then edit all the picture files to print them. This would probably be too much work which would force customers to pay for the content.

The NAP does something similar. They post every page of a book in an jpeg (image) file format. Compared to the possible macromedia flash method these jpeg files are a lot easier to print out, even though it is still a lot of work to print out every single image. But the customers still doesn't have the same options like he has when ordering the PDF file of a book (printing the text very fast, copying text, search options within the file or changing text style.)

2. Strategy - Demand for repeat views:

In case of Epub, like mentioned before, it would for instance be possible to post the whole literature online. The customer would only have the possibility to view the content over the internet.

The value of the downloaded PDF file would be that it could be printed out and read whenever the customer wants. The PDF file could also be saved on a disk and used on a computer that is not connected to the internet.

Compared to the online version "option value" is added to the PDF version of the book. The PDF or printed version of the book satisfies the customers demand for repeat views.

3. Strategy - Similar, but Not Identical, Products:

Consumers don't want to repeat viewing the same images over and over again, they want variations.

As we heard before the Wall Street Journal for instance gives away only a couple of weeks of its archive, but makes customers pay for their older material.

This could also be a good strategy for Epub. They could perhaps give away the older material of their holdings for free in order to sell the rest.

Further they could even give away much more of their content for free like the UC Press eScholarship Editions does. The UC Press eScholarship Editions in example grants access to about half of their content for free to the general public.

Offering such liberal terms to their customers could probably raise the popularity of the website and lead to higher profits. Customers could experience the quality of Epubs content and this could raise the demand for similar products.

4. Strategy - Complementary goods:

Offering the index or search service for free is another way to increase the demand for content.

A wide range of search options is offered for instance by the UC Press eScholarship Editions. Epub could in example upgrade the free full text searching of their contents with some more new features. In case that Epub uses a new Strategy like for instance giving away the half of their content for free, also new search services could be implemented.

They could in example provide a search option that allows users to search for free material only like the UC Press eScholarship Editions does. Also a more detailed index could be helpful to increase the demand. Epub could provide a more detailed abstract to their customers. Additionally they could also offer a table of contents for each work.

5. Strategy:

A final strategy for Epub could also be to charge a certain amount of money for offering access to their whole or a special part of their content for a limited period of time. This is what the Academic Library does for instance.

Epub could make their materials accessible for i.e. 24 hours or even a week or month for a certain amount.

All these possible strategies could perhaps also be combined. A customer could for instance choose whether he wants to pay a big amount to gain access to the whole material, or pay a smaller amount to get only a special work or even only some of the chapters.

Copyright Issues for Epub:

All rights in the material and the copyrights should be owned by Epub and the authors of dissertations. Customers should not be permitted to copy, share, publish, modify, distribute or transfer any material, except for their personal non-commercial use, without a prior permission of Epub or the author of a dissertation. The author of dissertations should be able control all the copyrights and allowed to publish his work with another publisher at any time. In case that the author wants Epub to stop the distribution of his work he must provide them with a given time notice.

To prevent customers to break these rules, permission management is required to limit the rights associated with some content. Permission Management deals with the usage environment as mentioned earlier in this paper. Restrictions for content can be reached trough several technologies. Adobe PDF i.e. supports such restricting functions. It is for instance possible to configure a PDF file in a way that customers are permitted to copy or print the text within the document.

Still there are technologies to bypass encryption measures used by the copyright holder to limit access to his material. Title 1, the WIPO Copyright and Performances and Phonograms Treaties Implementation Act, of the Digital Millennium Copyright Act handles such cases. It deals with copyright protected materials and builds the basis of international copyright law and management.

Advantages and Disadvantages of these strategies:

	ADVANTAGES	DISADVANTAGES
1.STRATEGY	Offering very liberal terms to let customers experience the goods can lead to higher popularity of the library and raise the sales.	Sales could also suffer if it is too easy for the customer to use or to print the content which is available for free.
2.STRATEGY	Offering free goods with restricted options can be helpful in order to sell the paperback edition of the content or i.e. a PDF file which satisfies the customers demand for repeat views.	Sales could also suffer if the restricted options of the online version also fulfil the customer's requirements.
3.STRATEGY	Offering a part of the library's content or older materials for free can raise the customers demand for similar products.	The free or older material can also be very valuable. Sales could suffer if the library gives away too much of it.
4.STRATEGY	Offering a good index and a wide range of search services for free can increase the demand for the library's content.	
5.STRATEGY	To charge a certain amount of money for offering access to their whole content could be very attractive for customers and could lead to high profits.	Customers could probably consume too much of the material during this period of time.

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